(Viv 00 Deb)

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Patents Copyrights Trademarks
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June 3, 2002

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DEBIT SUMMARY VIVO COM

Billed on 03May02 for Apr 02 Services $2,305.00
RECEIVED Check 1117   on 16May02 . . ($2,305.00)

Services and Disbursements for May 02

Crt 10 Smt.ISw - Smart Internet Switch
    Assignment Matters

06May	Tele to JW Assignment Details Witness/Notary?	10:55-11:10	15/min -	60
06May	Tele message from JW		NO CHARGE	

08May	Prepared new
	Assignment Document
	    Vivocom Inc to Vivocom LLC
	    with cover letter
		09:40-10:30	50/min -	200

17May	Reviewed Assignment Prepared Recording Papers Paid PTO Fee. . . . .$040.00 Filed with PTO 21 May 02 file copies to JW 21 May 02	09:30-10:05	35/min -	140

                . . . . $400.0

Viv 12 FW.Adp - Firewall Adaptor - Patent Application

09May	Edit Claims/outline Fax to NK	08:00-08:40	40/min -	160
09May	Tele to NK	11:12-11:25	10/min -	40

Date	Description	Time	Rate
13May	Edit Claims/outline Fax to NK 09:11	08:30-09:05	35/min - 140
17May	Tele to NK		10/min - 40
20May	Edit Claims/outline	07:15-08:20	65/min - 260
22May	Edit Claims/outline Fax to NK 08:42	08:05-08:40	35/min - 140
29May	Tele to NK	10:46-10:55	10/min - 40
29May	Edit Claims/outline	11:10-12:00	50/min - 200
30May	Rough Drawing Fig 1	14:35-15:15	40/min - 80
31May	Rough Drawing Fig 2 3 4	11:15-12:15	60/min - 120
03Jun	Summary Report with Claims and Drawings		NO CHARGE

. . . .$1,220.00

	May Disbursements	May Services
	$40.00	$1,620.00
Total due for May 02		$1,660.00

Adria.Com
ICU
Internet
com
10\14 winvol cut SJ 95\16
va limit. NO App

9:56 (d) 4
18Jun
11:86 (c) ↑

15:36 i.49
17June (c) ↑

FW standard → forward server based complies w/ anything

**FIREWALL ADAPTER FOR STANDARD ~~BASED~~ AWARE
COMMUNICATION SYSTEM AND METHOD**

by Inventors

**Nenad Krtolica and
Dalibor Kukoleca**

~~Ned 650 964 5006 105~~

Ned - new stuff, questions and areas that need attention
are underlined

~~tunneling~~ - one "l"
~~standard aware~~ - no hyphen

ASW
Client appln
HW end point

TECHNICAL FIELD

This invention relates to routing voice/video/data
communications through firewalls, and more particularly
to such routing through selected ~~logical FW~~ ports with
minimal security risk.

NW

BACKGROUND

PA slow net - UDP for vv saves BW, drop OK - data
separate on TCP

Heretofore, security firewalls interfered with
smooth exchange of voice/video/data <u>information</u> over the
internet.

This difficulty can be overcome by temporarily reducing
or removing firewall protection.

Firewalls are established and maintained
        by residual software (and hardware)
                to prevent unauthorized
        <u>entry into the host LAN (local area network)</u>
                <u>and unauthorized access to local</u>
                <u>hardware and software, and other resources.</u>

?local data?

They are typically <u>installed</u> between the host system and
the outside world, especially the internet.

However, firewalls may also be intra-organizational
        <u>(within a LAN)</u>,
                between the protected host data and
                        other departments of a host organization.

server web acc much gateway

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Without firewalls, casual hackers and other intruders may enter the host by <u>various means including</u>

      <u>uncovering the password</u>
5   <u>and logging-in as a legitimate user,</u>

      <u>through Trojan Horse tactics,</u>

      <u>employing e-mail techniques,</u>
10

      <u>open port</u>

      <u>and other low-level strategies.</u>

15 Understandably, serious organizations are reluctant to reduce firewall security.

20

      An alternative to removing firewall protection is to install costly, <u>standard aware</u>

!! name or type !!
25

software and hardware, such as a pix firewall <u>and</u> router

??from !prominent supplier! Cisco??.

30 ?-SHORT DEFINITION OF STANDARD BASED!AWARE ?

Standard based!aware communication tools are selected
      from a pool of commercially available, commonly used, compatible software and hardware.
35
<u>A typical user may have twenty or so</u>
      <u>of these standard based!aware clients (applications)</u>
      <u>residing locally on their system.</u>

40 <u>Voice and video clients include programs based on H323,</u>
<u>MGCP, and SIP, and data transfer clients are generally</u>
<u>T120 based.</u>

45 Standard aware programs recognize industry standard heather configurations within

?? the communication data packets.
50
! does not need upgraded router or firewall

Currently the four major standard configurations are

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H323, MGCP, and SIP for voice and video communications, and T120 for data transfer.

Both parties need compatible,
5   <u>standard aware</u> equipment, which is typically complex, <u>requiring an on-site, network security administrator to set-up and maintain.</u>

<u>The firewall router may be located at any entry point</u>
10 <u>into the protected LAN such as</u>
        <u>before first server,</u>
        <u>before the frontend router, or</u>
        <u>before the modem end router.</u>

15

The desired seamless communication requires multiple logical!FW ports in the firewall which are serially opened one at a time.
20

Each data packet <u>stream forming</u> a communication crosses the firewall through a different port.

25 For security reasons,
        each next-open-port in the series
            is selected at random from an
        available port population of <u>65,511</u> out of a
        total port population of <u>65,535</u>.
30

SUMMARY

35   It is therefore an object of this invention to provide a standard based!aware, firewall friendly communication system between a sending party<u>(s)</u> and a receiving party<u>(s)</u>.

40 Each party's local system needs only
        <u>standard based, user friendly, off-the-shelf,</u>
        <u>low priced hardware and software,</u>
        <u>plus the present firewall adapter.</u>

45 ??
The firewall adapter is standard based!aware computer program which permits multiplex tunneling at a specified port.

50

Both parties may already have the required standard based clients in their systems, and use them regularly for communication over the internet.

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Neither party needs to install any new hardware or
software or review any new operating manuals <u>for
firewalls or routers</u>

5   ?? <u>other than the present firewall adapter in order to</u> M

It is another object of this invention to provide
such a standard based system in which the sending party's
10 system need not be the same as the receiving party's
system or even be compatible therewith.

<u>The present firewall adapter is "portable" having
universal application with various operating systems such
15 as</u>

<u>major commercial feature</u>

<u>?? Windows and Linux, all flavors of Unix</u>
20

It is another object of this invention to provide
25 such a standard based system which maintains high
security by employing a single, pre-selected port in a
customized set-up configuration.

why   *by conv-nt*

web
30 Port 80 is the default port which is open for   *by Co*

busy - heavy traffic   *browser web server*

open a non-default port exclusively for selected traffic
35
employing a single custom set-up port.

aware
40
It is another object of this invention to provide
such a standard based system which provides increased
security by opening a private channel within a logical!FW
port.
45
coding and scrambling - hard to tap

50   BRIEF DESCRIPTION OF THE DRAWING!S

Further objects and advantages of the present
standard based system and the firewall adapter will
become apparent from the following detailed description

and drawing!s in which:

FIGURE 1 is a block diagram of communication system 10 across internet 10N in which sending party 10S has firewall 18S and receiving party 10R has firewall 18R.

FIGURE 2 ? DO WE NEED MORE FIGURES ?

REFERENCE NUMERALS IN DRAWINGS

The table below lists the reference numerals employed in the figures, and identifies the element designated by each numeral.

```
10   Standard Based Communication System 10
10N  Internet 10N
10R  Receiving Party 10R
10S  Sending Party 10S
12D  Data Packets 12D
14M  Format Monitor 14M
16R  Packer Redirector 16R
18F  Security Firewall 18F
18P  Open Port 18P
```

STANDARD BASED SYSTEM (FIG. 1)

DEFINE NET
a wide area communication network such as the internet or a narrow area network such as a local area network (LAN)

Standard based system 10 supports firewall friendly communication between sending station 10S and receiving station 10R across a communication network such as internet 10N.

The sending and receiving parties may be
    individuals using simple PCs
        at a single work station,
    or large organizations using complex computers and machines.

logical channel within port
    65k ports
    thousands of channels - limited by BW

firewall 12S 12R
    prepares open channel both sides

Each station has a standard based <u>communication</u> client //S and //R

??
    netmeeting - vid voi data

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```
cucme
intel phone - voi vid
net to phone - voi
```

5

Firewall adapters //S and //R are positioned between the communication client and the firewall.

10   multi ports ? four or more to single multiplex port
            four people talking at once
            local ports
            firewall ports
            internet ports
15   logical ports
            internal/external

Sending data packet stream 12S from sending station 10S
            passes from the sending firewall adapter through the
20   sending firewall, across internet //, through the
      receiving firewall

The internet contains proxy server // for NAT (network
25   address translations)

LAN not regular IP address
            visible for outside

30   private network address starting with 192

problem with private address
            calling pc sees real router not private address

35

multiports to one entry point

? opens tunnel with many channels - one port
40

many parallel connections - density and thru put

F2 port tunneling for security
?   buried in
45

tunneling works with all proxy systems

METHOD OF FIREWALL FRIENDLY OPERATION
50

      The primary steps of the general method of standard
based communication is described below.

The apparatus employed in carrying out this method is

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disclosed in FIG.s 1-?, and in the related detailed descriptions.

5   <u>Providing firewall 18F</u> between sending party 10S and receiving party 10R.

Firewalls are typically established when a new system comes on line, and are maintained continuously.
10

         <u>Opening at least one logical!FW port</u> in the firewall. This open port may be port 8080 which is normally open for public interface.
15
Any other port may be employ as the open port.

More than one port may be opened simultaneously to improve communication capacity.
20
However, minimizing the number of open ports reduced the security risk.

25

         <u>Monitoring traffic outside the firewall.</u> Format monitor device 14M examines the format of each incoming
30   data packet.

Packets with expected formats are accepted, and packets with alien formats are discarded.
35

Generally, the accepted data packets have either of the following two major ITU (international telecommunication union) formats:
40   T120 data format
              (white board applications,
               file transfers, etc.),
or
         H323 data format
45   (voice and video).

Each format has particular delivery and communication rules.

50   ? heather front end - structure
              specified recipients

> _Redirecting accepted traffic_ to the open port in the firewall by means of packet redirector 16R.

5

> _Tunnelling the redirect traffic_ through the firewall by pushing data packets through the open port.

The tunnelling is bidirectional. The receiving party may
10   transmit!send communications to the sending party through the same open port in the firewall.

> The tunneled data packets are then played (voice),
15   displayed (video), or processed (data).

> The general method may have the following additional steps:
20

> _Selecting another open port_ in the firewall.
Logical port 8080 is the default port in many systems.

Overuse of port 8080 may crowd the traffic and load the
25   port bandwidth limitations.

? roll-off - loss of data ?

30

The parties may select another port which has less traffic.

This selection may be executed automatically by the host
35   system as traffic density approaches a specified load.

CONSUMER PARTY LINE
40

> The present standard based system may provide internet communication between individual PCs (or groups of PCs)

45   ? YOU GUYS CAN TALK BE THROUGH THIS SERVICE ?

> consumer party line
> 9.95/mo
> piece of a web page
50   from outlook

CORPORATE CONFERENCE CALL

The present standard based system may also provide internet conference communication within an organization.

? YOU GUYS CAN TALK BE THROUGH THIS SERVICE ?

5

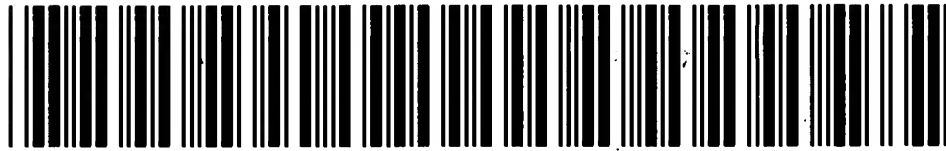corporate conference call
air conference sw
company directory

10   IP call center router

Nenad   650 964 5006 105

These are our claims in nearly final form
      plus rough drawings.
We are about half finished

IDS REFERENCES

||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||

☐ FOR

OUTLINE OF CLAIMS

1)   Method
          Sending/Receiving Units/Systems
          Communication Network
          Firewall - local client ports
          Standard Aware - in/out information
STEPS
     Providing Firewall Adapter
     Determining S/R Adapter Port
     Establishing Communication
     Multiplexing outgoing
     Sending
     Receiving
     DeMultiplexing incoming

STANDARD BASED
fx** 2)   Standard Aware is Standard Based

FIREWALLS
fx** 3)   One Firewall

fx** 4)   Two Firewalls S/R

COMMUNICATION NETWORK
fx** 5)   Network Protocol
         *
fx   * ** 6)   TCP
         *   *
fx   *   * ** 7)   Voice Video
         *
fx   * ** 8)   Internet
         *
fx   * ** 9)   WAN
         *
fx   * ** 10)   LAN

PORT DETERMINATION
fx** 11)   Select Port

fx** 12)   Range of Ports

fx** 13)   PreDetermined
         *
fx   * ** 14)   Default Port
             *
fx   * ** 15)   HTTP Port

fx** 16)   S/R same determined port

CHANNEL
fx** 17)   Open Channel

PROXY
fx** 18)   proxy
         *
fx   * ** 19)   Translating

Viv12FW.Adp   Krtolica-Kuloleca   Claim Outline   July 21, 2003